## INDEX

## Transaction of American Society for Metals

# Volume LVII, 1964

#### **Index of Authors**

A	E
Achter, M. R	Engel, Niels
Achter, M. R	Dinger, Meissessessessessessessessessessessessess
Asser, G. S	F
Avery, D. H	
Avery, D. H 900	Felten, E. J 804
В	Fischer, George
P. I. C. W. A	Fletcher, Stewart G 1042
Backofen, W. A	Floreen, S
Baird, Bruce L	Floridis, T. P
Baker, A. J	Fostini, R. V
Banerjee, B. R	
Beattie, Jr., H. J	G
Bonis, L. J	Code L W C 904
Boone, D. H	Gerberich, W. C
Bosch, R. A	Girton, L. D
Boyd, J. E	Goldhoff, R. M
Braun, J. D	Goldman, A. J
Brien, R. E	Goodenow, R. H
Bucknall, E. H	
Buckner, R. L	
Bush, R. H	Gregg, Roger A
C	Gross, Jr., A. G
G 1 31 T 4	Gruner, J. D
Cahill, J. A	Gruner, J. D
Capenos, J. M	**
Carlson, O. N	H
Chang, W. H	Hahn, Henry 823
Chao, H. C	Hammond, C. M
Chilcott, Jr., W. R	Hanna, G. L 658
Chotinuchit, P	Hauser, J. J
	Heckel, R. W
Christian, J. L	Hehemann, R. F
Conrad, H	Hertzberg, R. W 434
Convey, John	Hodge, W
	Holtz, F. C
Crussard, Charles	Hornbogen, E
	Hornbogen, E
D	Hornbogen, E
The state of the s	I
Daines, W. L	•
Daines, W. L	I
Daines, W. L.       1011         Davies, R. G.       247         Doherty, R. D.       874	I Ianniello, L
Daines, W. L	I
Daines, W. L.       1011         Davies, R. G.       247         Doherty, R. D.       874	I Ianniello, L

J	Pechin, W. H
•	Pehlke, R. D
Jacobson, M. I	Pelloux, Regis M. N
James, H. M	Pennington, William A
Jellison, Jane	Philip T V 005
Joshi, P. G	Philip, T. V
Justusson, W. M	Phillips, Jr., W. L
	Pitler, R. K
K	Polonis, D. H
	Putnam, Allan Ray 1054
Karchner, G. H	
Kirshenbaum, A. D 417	R
Klawitter, W. A	Raudebaugh, Robert J 1060
	Raymond, L
	Repas, P. E
	Richmond, O
Koch, C. C	Rinnovatore, J. V
Koistinen, D. P	Robinson, Allen T 650
Kolbe, Carl L	
Kolski, T. L 690	Rough, F. A
Kothari, N. C	S
L	Saarivirta, Matti J 133
Larsen, W. L	Scheil, Merrill A 1050
Larson, Frank R 620	Schmidt, F. A
Lement, B. S	Semchyshen, M 632
Lenel, F. V	Setzer, W. C
Leslie, W. C	Shaw, C. W
Llovd, Roger D. 823	Shepard, L. A
	Shirra, W. P
Loria, Edward A	Smith, J. F
Louthan, Jr., M. R 1004	Smith, M. J. 337
Luke, C. A	Smith, M. J. 337 Sola, Marcos C. 164
Lykens, A. A	
	Companie C A
•	Somorjai, G. A
•	Speich, G. R 714
М	Speich, G. R.         714           Stark, Philip         208
M Maniar, G. N	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603
M Maniar, G. N. 368 Markus, H. 474	Speich, G. R.         714           Stark, Philip.         208           Stegman, R. L.         603           Steigerwald, E. A.         658
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743	Speich, G. R.         714           Stark, Philip.         208           Stegman, R. L.         603           Steigerwald, E. A.         658           Stephenson, E. T.         208           Steven, Gary.         925           Stevens, D. W.         261
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991	Speich, G. R.         714           Stark, Philip         208           Stegman, R. L.         603           Steigerwald, E. A.         658           Stephenson, E. T.         208           Steven, Gary         925           Stevens, D. W.         261           Stoloff, N. S.         247
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766	Speich, G. R.         714           Stark, Philip         208           Stegman, R. L.         603           Steigerwald, E. A.         658           Stephenson, E. T.         208           Steven, Gary         925           Stevens, D. W.         261           Stoloff, N. S.         247
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164	Speich, G. R.         714           Stark, Philip         208           Stegman, R. L.         603           Steigerwald, E. A.         658           Stephenson, E. T.         208           Steven, Gary         925           Stevens, D. W.         261           Stoloff, N. S.         247
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589	Speich, G. R.         714           Stark, Philip         208           Stegman, R. L.         603           Steigerwald, E. A.         658           Stephenson, E. T.         208           Steven, Gary         925           Stevens, D. W.         261           Stoloff, N. S.         247           Sullivan, C. P.         572, 831           Sutfin, Lloyd V.         749           Swann, P. R.         1008
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972	Speich, G. R.       714         Stark, Philip.       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary.       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       Taggart, R.       142
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3, 164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832	Speich, G. R.       714         Stark, Philip.       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary.       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       T         Taggart, R.       142         Thomassen, L.       386, 885
M Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       T         Taggart, R.       142         Thomassen, L.       386, 885         Troiano, A. R.       519, 658, 949
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832	Speich, G. R.     714       Stark, Philip     208       Stegman, R. L.     603       Steigerwald, E. A.     658       Stephenson, E. T.     208       Steven, Gary     925       Stevens, D. W.     261       Stoloff, N. S.     247       Sullivan, C. P.     572, 831       Sutfin, Lloyd V.     749       Swann, P. R.     1008       T     T       Taggart, R.     142       Thomassen, L.     386, 885       Troiano, A. R.     519, 658, 949       Trozera, T. A.     309
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925	Speich, G. R.     714       Stark, Philip     208       Stegman, R. L.     6603       Steigerwald, E. A.     658       Stephenson, E. T.     208       Steven, Gary     925       Stevens, D. W.     261       Stoloff, N. S.     247       Sullivan, C. P.     572, 831       Sutfin, Lloyd V.     749       Swann, P. R.     1008       T       Taggart, R.     142       Thomassen, L.     386, 885       Troiano, A. R.     519, 658, 949       Trozera, T. A.     309       Tuffnell, G. W.     301
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832	Speich, G. R.     714       Stark, Philip     208       Stegman, R. L.     603       Steigerwald, E. A.     658       Stephenson, E. T.     208       Steven, Gary     925       Stevens, D. W.     261       Stoloff, N. S.     247       Sullivan, C. P.     572, 831       Sutfin, Lloyd V.     749       Swann, P. R.     1008       T     T       Taggart, R.     142       Thomassen, L.     386, 885       Troiano, A. R.     519, 658, 949       Trozera, T. A.     309
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       T         Taggart, R.       142         Thomassen, L.       386, 885         Troiano, A. R.       519, 658, 949         Trozera, T. A.       309         Tuffnell, G. W.       301         Turner, I. R.       980
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3, 164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       663         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       Taggart, R.       142         Thomassen, L.       386, 885       Troiano, A. R.       519, 658, 949         Trozera, T. A.       309         Turner, I. R.       980         V
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885  Ofte, Donald 916	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       603         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       T         Taggart, R.       142         Thomassen, L.       386, 885         Troiano, A. R.       519, 658, 949         Trozera, T. A.       309         Tuffnell, G. W.       301         Turner, I. R.       980
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 985 Ofte, Donald 916 Ogden, H. R. 362	Speich, G. R.       714         Stark, Philip       208         Stegman, R. L.       663         Steigerwald, E. A.       658         Stephenson, E. T.       208         Steven, Gary       925         Stevens, D. W.       261         Stoloff, N. S.       247         Sullivan, C. P.       572, 831         Sutfin, Lloyd V.       749         Swann, P. R.       1008         T       Taggart, R.       142         Thomassen, L.       386, 885       Troiano, A. R.       519, 658, 949         Trozera, T. A.       309         Turner, I. R.       980         V
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885  Ofte, Donald 916	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 6603 Steigerwald, E. A. 658 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd V. 749 Swann, P. R. 1008  T  Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Turner, I. R. 980  V  Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015
Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3,164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N Nehrenberg, A. E. 925 O Oberin, F. 885 Ofte, Donald 916 Ogden, H. R. 362 Owczarski, W. A. 572	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 6603 Steigerwald, E. A. 658 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd V. 749 Swann, P. R. 1008  T  Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 985 Ofte, Donald 916 Ogden, H. R. 362	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 663 Steggrand, E. A. 665 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd V. 749 Swann, P. R. 1008  T  Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Tuffnell, G. W. 301 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015  W Warrick, R. J. 672
Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3,164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N Nehrenberg, A. E. 925 O Oberin, F. 885 Ofte, Donald 916 Ogden, H. R. 362 Owczarski, W. A. 572	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 663 Steggrandd, E. A. 665 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd V. 749 Swann, P. R. 1008  T  Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Tuffnell, G. W. 301 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015  W Warrick, R. J. 672
M  Maniar, G. N. 368  Markus, H. 474  Martin, C. F. 324  Martin, J. W. 874  McCoy, Jr., H. E. 743  McEvily, Jr., A. J. 991  McDonald, John C. 766  McIntyre, R. D. 351  Meyerson, Melvin R. 3,164  Miller, R. L. 892, 972  Morris, J. G. 589  Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885  Ofte, Donald 916  Ogden, H. R. 362  Owezarski, W. A. 572	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 663 Steggrand, E. A. 665 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd V. 749 Swann, P. R. 1008  T  Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Tuffnell, G. W. 301 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015  W Warrick, R. J. 672
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885 Ofte, Donald 916 Ogden, H. R. 362 Owezarski, W. A. 572  P  Parcel, R. Wayne 766	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 6603 Steigerwald, E. A. 658 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd 749 Swann, P. R. 1008  T Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Tuffnell, G. W. 301 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015  W Warrick, R. J. 672 Weinstein, D. 284 Wells, C. H. 831
M  Maniar, G. N. 368 Markus, H. 474 Martin, C. F. 324 Martin, J. W. 874 McCoy, Jr., H. E. 743 McEvily, Jr., A. J. 991 McDonald, John C. 766 McIntyre, R. D. 351 Meyerson, Melvin R. 3, 164 Miller, R. L. 892, 972 Morris, J. G. 589 Murphy, D. J. 832  N  Nehrenberg, A. E. 925  O  Oberin, F. 885 Ofte, Donald 916 Ogden, H. R. 362 Owczarski, W. A. 572  P  Parcel, R. Wayne 766 Passmore, E. M. 760	Speich, G. R. 714 Stark, Philip 208 Stegman, R. L. 6603 Steigerwald, E. A. 658 Stephenson, E. T. 208 Steven, Gary 925 Stevens, D. W. 261 Stoloff, N. S. 247 Sullivan, C. P. 572, 831 Sutfin, Lloyd 749 Swann, P. R. 1008  T Taggart, R. 142 Thomassen, L. 386, 885 Troiano, A. R. 519, 658, 949 Trozera, T. A. 309 Tuffnell, G. W. 301 Turner, I. R. 980  V Van Vlack, L. H. 386, 672, 885 Vernia, Peter 1015  W Warrick, R. J. 672 Weinstein, D. 284 Wells, C. H. 831

## SUBJECT INDEX

Williams, D. E.	464	Wulff, J	94
Williams, D. N		Y	
Wittenberg, L. J.	916	Yeo, R. B. G	48
Wlodek, S. T		Z	
Wriedt, H. A.	294	Zwilsky, K. M.	701

# Subject Index

A		Arc-zone melting	
Age hardening		production of single crystals	356
		ASM Chapters and Officers	1032
Fe – 18 Ni base alloy	38	ASM Election of Officers	1053
PH 15 - 7 Mo stainless steel	856	ASM Foundation for Education and	
Aging,		Research Report	1060
Fe - 0.9 Cu alloy	120	ASM Managing Director's Report	1054
3003 aluminum alloy	589	ASM Medalists, Awards and	
Alloy steels		Life Members	1021
3.5 Cr - Mo - V, effect of Cb on prop-		ASM Officers and Trustees	1020
erties and structure	494	ASM Presidential Address	1050
A-286, notch sensitivity	368	ASM Secretary's Report	1042
D6AC, biaxial stress-strain prop-		ASM Standing Committees	1026
erties	62	ASM Technical Program at 46th	
5M21, effect of orientation on me-		Annual Convention	1040
chanical properties	991	ASM Treasurer's Report	1044
300M, embrittlement by aqueous		Atmospheres, sintering	
environments	658	effect on properties of iron powder	351
43XX, isothermal transformation	186	Atom structure	610
4340, biaxial stress-strain properties	62	Ausforming	
4340, embrittlement by aqueous	-	H11	324
environments	658	18-8	301
8620, dimensional changes	164	Austenite.	00.
52100, dimensional changes		decomposition	324
52100, residual stress	581	Austenite, retained	
low-carbon, iron-nickel alloys, mar-	OCIA	determination	892
tensite transformation	48	stabilization	972
stabilization of austenite	972		0.2
Aluminum alloys	312	В	
1100, plastic strain in drawing	309	Beryllium	
2014-T6, fatigue cracking in vacuum.	373	density of molten metal	739
2219, recrystallization	766	tensile properties of extrusions	482
3003, recrystallization	589	work hardening	355
6061, recrystallization	766	Bervllium-copper	900
7178, influence of inclusions on fatigue	100	creep behavior	362
crack propagation	511	Bismuth – tin alloy	002
Aluminum-copper alloys	911	mechanical properties	347
recrystallization	874	Brass, 70/30	941
Aluminum-zine allov	OLA	delayed failure	949
superplasticity	980	strain-aging embrittlement	519
Anisotropic properties	300	Brazed joints	010
in titanium sheet	620	strength properties	94
Annealing treatment	020	Brittleness	01
effect of hydrogen atmosphere in		test method for studying	749
permeability of Permalloy	364	in Zircalov-2	1004
permeability of Permanoy	904	In zarcaroy-2	1004

C		E	
Campbell Memorial Lecture	779	Electron microscopy	
Carbon		replication technique	358
solubility in cobalt	1011	Embrittlement in	
solubility in iron	417	brass, 70/30	519
Carbon steels		Cu - 2% Be	474
0.40% C, effect of Mo on isothermal		heat resistant, low alloy steels	494
transformation	632	high-strength steels	658
rimmed, effect of temper rolling	900	Evaporation rate	
Cobalt-base alloys		germanium	26
SM-302, oxidation behavior	804	Explosive shocking	
Cold rolling,		effect on microstructure	86
effect on cryogenic properties of		Extrusion	
Type 310 stainless steel	199	effect on nonmetallic inclusions	672
of crowned strip	1000	Extrusions, Be	
Columbium	00	tensile properties	482
annealing behavior	86	F	
influence on mechanical properties	404	Fatigue behavior	
of 3.5 Cr – Mo – V steel.	494	Udimet 700	841
Columbium-molybdenum alloy	690	Fatigue cracking in	GAI
oxidation at elevated temperatures	090	2014-T6 aluminum alloy, effect of	
Constitution, metastable	142	high vacuum	373
Ti and Zr-base alloys	142	7178 aluminum alloy, influence of	9.0
grain growth	832	inclusions	511
Copper, OFHP	002	Fatigue resistance	
effect of sulfur	133	improvement by residual stresses	294
Copper-beryllium alloy	100	Fatigue strength	
embrittlement by liquid amalgam	474	nickel, as function of temperature	
Copper-chromium alloy		and vacuum	603
effect of whisker orientation on		Formability	
fracture behavior	434	relationship between tensile and bi-	
Copper-nickel		axial tests	399
homogenization of powder compacts.	443	Fracture	
Copper-nickel-zinc alloys		crack propagation studies	749
Young's modulus	554	effect of structure in 7178 aluminum	
Copper-zinc alloys		alloy	511
grain growth	832	effect of whisker orientation	434
Corrosion		of inclusion	672
Cu - 2% Be alloy	474	Fracture in biaxial stress tests	62
Cracking		Fracture toughness PH15 - 7Mo steels.	856
due to rolling	1000	G	
Creep strength			
Be – 2 Cu wire	362	Gage blocks dimensional stability	164
Creep, transient	778	Germanium	101
Crystal structure	010	evaporation rate	26
effect of bonding electrons on lattices.	610	Gold	20
		soldering materials for	568
		Grain boundaries	000
D		solute segregation	561
Delayed failure		Soldie Segregation	001
70/30 brass	949	H	
Density		Hafnium	
of molten Be	739	mechanical properties	77
Diffusion		Hardening mechanism in maraging steels	
powder metal compacts	443	High-speed steels	
Dimensional stability		M41, properties and performance	925
gage materials	3, 164	Hydraulic bulging	
Dislocations		Al - Mg alloys	399
theory of	778	Hydrogen embrittlement	
produced by temper rolling		Zr and Zr alloys	284

### SUBJECT INDEX

I		Manganese sulfide	
Impact strength		deformation and fracture in single	900
effect of ausforming	991	crystals	386
extraction for x-ray diffraction	427	in Fe-18 Ni base alloy	38
metallography		Maraging steels	
MnS, deformation and fracture mech-	1010	effect of hardening elements	714
anism	386	strain hardening of	823
MnS, hardness	885	strengthening mechanism	747
plastic deformation and fracture	672	precipitation hardening	1008
Iodide titanium	012	precipitation kinetics, in 25 Ni alloy.	220
thermal expansion	743	Martensite transformation in low-car-	
Iron	(40	bon Fe - 28.8 Ni	48
residual stress studies	294	Metallography	
	2374	nonmetallic inclusions	1015
Iron, powder		Molybdenum,	
effect of sintering atmospheres on	0*1	effect on isothermal transformation of	
properties	351	0.40% C steels	632
Iron-chromium alloy	000	Molybdenum-base alloys	-
solubility of nitrogen	360	effect of Ti and Zr on tensile prop-	
Iron-copper alloy		erties	527
aging effects	120	precipitation hardening	565
Iron-copper alloys		presipitation nardening	000
sintered powder metals, mechanical			
properties	909	N	
Iron-copper-tin alloys		Nickel	
sintered powder metals, mechanical		fatigue strength in vacuum as function	
properties	909		600
Iron-nickel alloy		of temperatureNickel. TD	603
solubility of nitrogen	360		
Iron-nickel base alloy		effect of thoria particles on recrystal-	201
gamma-prime precipitation	727	lization	701
Iron-nickel-chromium alloy		Nickel-base alloys	110
solubility of nitrogen	360	IN-100, microstructure	110
Iron-nickel-molybdenum quaternary		Udimet 700, eutectic structure in	
alloy		welds	572
mechanical properties	714	Udimet 700, fatigue characteristics	841
Iron-tungsten alloys		Nitrogen	
grain boundary-solute interactions.	561	solubility in solid Fe-Ni-Cr,	
Isothermal transformation	901	Fe-Ni, Fe-Cr alloys	360
U - Mo and U - Mo - Ti alloys	150	Notch sensitivity	
43XX steels	186	A-286 alloy	368
TOTAL SUCISION OF THE SUCION O	100	Notch toughness	
		of maraging steels	823
L		of titanium alloys	823
Low-carbon steel			
strengthening mechanisms	208	0	
Low-carbon steels		U	
magnetic aging	261	Ordering	
Low-melting point alloys	201	effect on properties of Mg - Cd alloy	247
mechanical properties	346	Oxidation	
meenament properties	010	of SM - 302	804
M		of 90 Cb - 10 Mo alloy at elevated	
M		temperatures	690
Magnesium-cadmium allov		Oxidation, intergranular in copper,	
effect of ordering on plastic deforma-		OFHP	133
tion	247	Oxidation, internal	
Magnesium-cobalt		in Ag-Mg alloys, effect on proper-	
phase relationships	337	ties	960
Magnetic aging,		Oxidation protection	230
of silicon iron and steels	261	of refractory metals	760
Magnetic permeability		Oxidation rates	. 00
of Ni - Mo - Fe and Ni - Mo alloys	364	platinum metals	33
	301	processing income and a second	00

P		S	
Phase diagrams		Self-diffusion	
C - Fe	417	in molten Pu - Fe alloys	916
Co - Ni	610	Silicon iron	:,10
Fe - Co	610	magnetic aging	261
Li - Mg	610	Silicon steels	201
Mg - Co.	337	magnetic aging	261
Ti - B	610	Silver-magnesium alloys	
Ti – Be	610	properties after internal oxidation.	960
Ti - C	610	Single crystals	
Ti - N.	610	Al - Cu alloys, recrystallization	874
Ti-0,	610	MnS, mechanism of deformation and	
Zn - Al	610	fracture	386
Zr - Co.	464	preparation by arc-zone melting	356
Plastic deformation	047	Slip	
effect of ordering, in Mg - Cd alloy	247 94	relation to fatigue strength in nickel	603
in brazed jointsPlastic strain	34	Solder	
in wire drawing	309	for Au wire	568
Plasticity	303	Solubility	
in Al - Zn alloy	980	of C in Co	1011
Platinum metals	000	Stainless steels	
oxidation resistance at elevated tem-		austenitic, stress-rupture strength	7.54
peratures	33	Ph 15 - 7 Mo, age strengthening	856
Plutonium		PH 15-7 Mo, biaxial stress-strain	200
recrystallization	768	properties.	62
Plutonium-iron alloys		18 - 8, strengthening by ausforming.	301
viscosity	916	310, mechanical properties at cryo-	100
Powder metal compacts tungsten, per-		genic temperatures Strain aging	199
meability	650	brass, 70/30	519
Powder metals		Strain, critical	913
refractory	756	effect on recrystallization of Cu - Zn	
interdiffusion during homogenization	443	alloys	832
Powder metallurgy		effect on recrystallization and	
Fe - Cu, Fe - Cu - Sn	909	strength of aluminum alloys	766
Precipitation hardening		Strain hardening	
in Fe - Ni base alloys	727	in maraging steels	823
in low - C Mn steels	208	in titanium alloys	823
in maraging steels	747	Stretch forming	
in Mo-base alloys	527	of Al - Mg alloys	399
in 25 Ni alloy	220	Stress corrosion	
strain induced, in Mo-base alloys	565	resistance, improvement by residual	
R		stresses	294
Recrystallization		Stress rupture	
of aluminum alloys, due to critical		effect of solution temperature	754
cold work	766		
of Al - Cu alloys, single crystals	874		
of Cu and Cu - Zn alloys	832	T	
of TD-nickel	701	Thermal expansion,	
of plutonium	768	iodide titanium	743
of 3003 aluminum alloy,		Thermodynamic data,	
kinetics	589	MgCO <sub>2</sub> formation	337
Refractory metals		Tim land allam	
diffusion barriers	760	mechanical properties	347
hot pressed from powders	756	Tin-lead-antimony alloy	
Replication technique		mechanical properties	347
for electron microscopy	358	Titanium	
Residual stresses		effect on tensile properties of Mo-base	
effect of chemical gradients	294	alloys	527
in gage blocks	164	Titanium alloys	200
munchi. In surraces	300	machanical proportion we anicotrony	65.711

#### SUBJECT INDEX

EX

metastable constitution 142	Wire drawing,	
Tool steels	plastic strain determinations	309
D2, dimensional changes 3, 164	work hardening effects in Be	355
H11, biaxial stress-strain properties 62	Work hardening	
H11, effect of orientation on me-	in drawn Be wire	355
chanical properties		3.70
H11, influence of decomposition		
	X	
products on strength 324		
T15, dimensional changes 3, 164	X-ray analysis	
W4, dimensional changes	of nonmetallic inclusions	427
Transformation, continuous cooling,	X-ray diffraction,	121
0.40% C steels containing Mo 632	determination of retained austenite.	892
Tungsten,	determination of retained austenite	092
annealing behavior		
	Y	
permeability of powder metal com-	I	
pacts	Yield point mechanism	900
**	Young's modulus	300
U	of Cu - Ni - Zn alpha solid-solution	
Uranium-base allovs		
isothermal transformation 150	alloys	554
isothermai transformation 150		
V	7	
	Z	
Valencies	Zerolling	
determination from Young's modulus 554	18-8 stainless steels	301
Viscosity	Zirconium	901
of Fe - C alloys	And a contraction	004
of Pu – Fe alloys	hydrogen embrittlement	284
off u - realbys 310	effect on tensile properties of Mo-	
W	base alloys	527
"	Zirconium alloys	
Welding,	hydrogen embrittlement	284
influence on structural changes in	metastable constitution	142
Udimet 700 572		1004
Whisker orientation	Zirconium-cobalt	1001
		40.
effect on fracture behavior	phase diagram	464